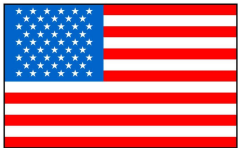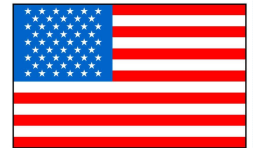# SCLSIS DATABASE AUDITs & Root Cause Analysis
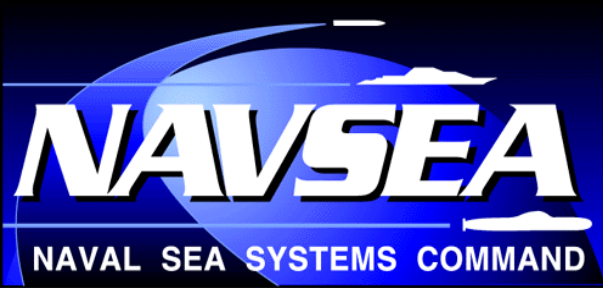## CDM/ISEA Working Group

08 JUL 03

Tom Ponko, A2Z, Inc.
Keith Zeger, NSLC

SCLSIS Database Audit

- Purpose
- Update
- Schedule
- Process
- Lessons Learned
- Root Cause Analysis
- Summary

Purpose

- Quantifies overall health of ship configuration accuracy.
- Provides method for trending configuration accuracy.
- *Statistically Valid……….defendable data.*
- Baseline for Process Improvement..
- Additional data point for subsequent focused validation efforts.

Update

- Team established at FTSCLANT Nov 02.
  - Team Training Nov 02 – Jan 03.
  - NSLC observed and certified process.
- First Audit (LSD-44) aborted due to short fused operational requirement.
  - Utilized available time onboard to refine/proof process.
- Audits focused on Norfolk ships.
- Completed audits on 5 DDGs, 2 FFGs, 2 CGs and 2 LSDs.
- Team scheduled thru Sep 03.
- *Investigating options/cost for expanding to other locations.*
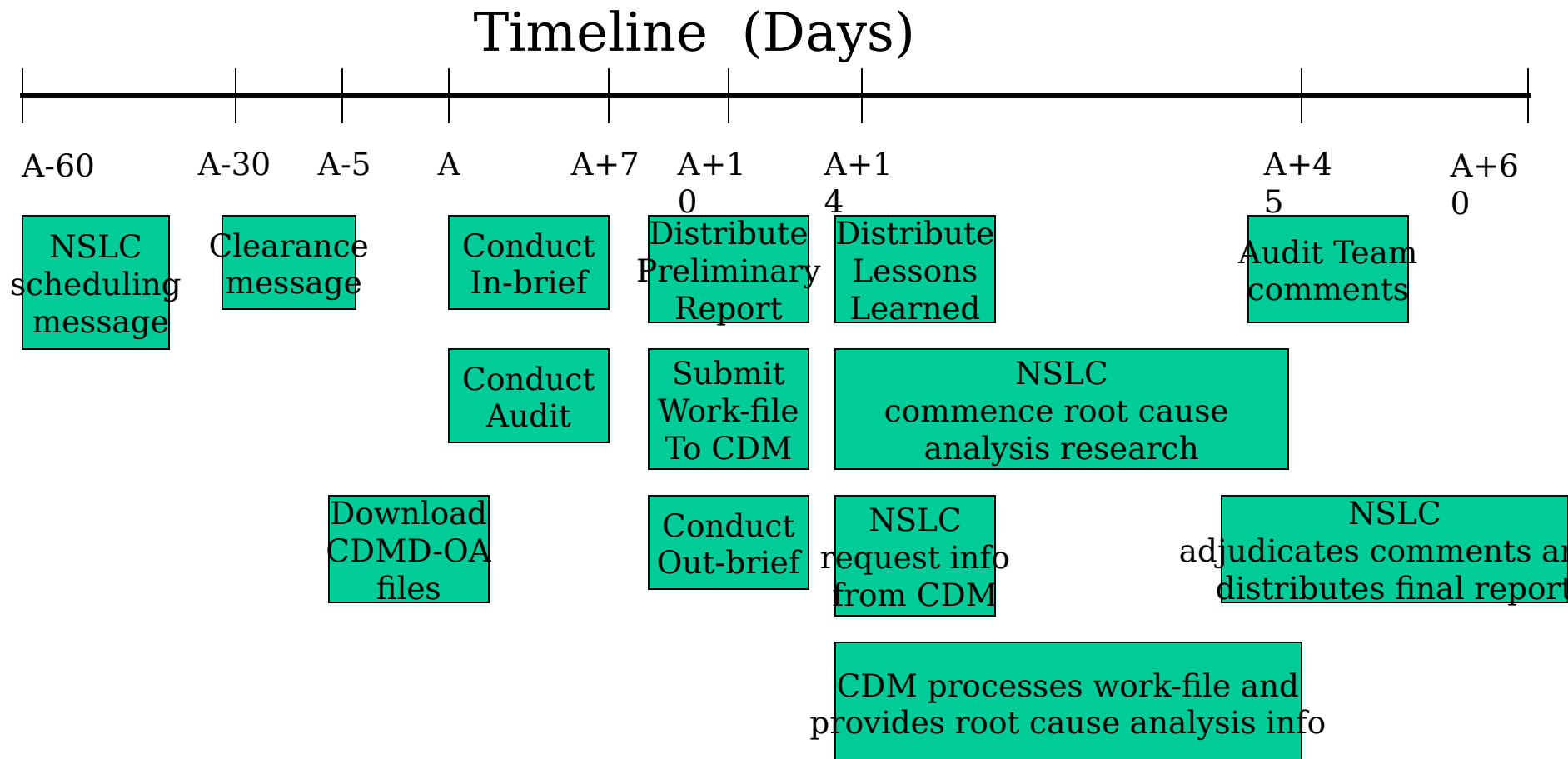
Schedule

- 07 – 14JUL03   USS Cape St. George CG-71

- 21JUL – 04AUG03   USS G. Washington CVN-73

- 11 – 18AUG03   USS Mahan DDG-72

- 25AUG – 05SEP03   USS Mason DDG-87

- 08 – 19SEP03   USS Kearsarge LHD-3

- 22 – 29SEP03   USS Ross DDG-71

Process

- Statistically Valid Random Sample.
  - Sample Size determined:
  - 95% Confidence Level that reality is within +/- 3% of results.
  - 25% Expected Maximum Error Rate
- 50% Record to equipment (Order of selection).
- 50% Equipment to record. (Immediate left)
- Sight verification of installed equipment and associated up-line reporting.
- CDM participation.
- Preliminary Report to CDM/Ship/04L5/SPM/NSLC upon completion.
- NSLC conducts Root Cause Analysis.
- Final Report to SPM/04L5 for review after Root Cause Analysis complete.
- Distribute report to TYCOM.

Process

Timeline (Days)

A-60   A-30   A-5   A   A+7   A+10   A+14   A+45   A+60

| NSLC scheduling message | Clearance message | | Conduct In-brief | | Distribute Preliminary Report | Distribute Lessons Learned | | Audit Team comments |

| | | Conduct Audit | Submit Work-file To CDM | NSLC commence root cause analysis research |

| | Download CDMD-OA files | | Conduct Out-brief | NSLC request info from CDM | | NSLC adjudicates comments and distributes final report |

| CDM processes work-file and provides root cause analysis info |

Note: Process is maturing and expected to take less time as we prog
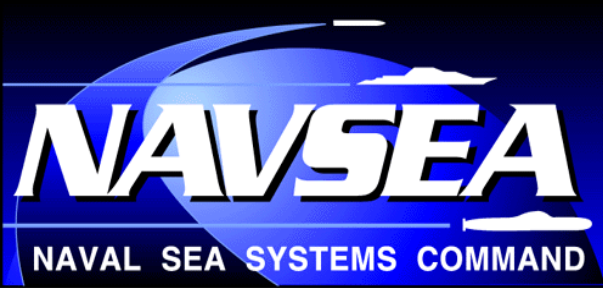
Lessons Learned

- Process is sound
  - Continue manual workarounds until TOMCAT changes complete.
- Candidate Selection
  - Doubling required "Record to Equipment" candidates appears sufficient
  - Consider implementing filters
  - "Equipment to Record" Selection is an issue

Hull Type	DDG	DDG	DDG	DDG	LSD	FFG	CG	CG	LSD
Deferral Rate	43%	40%	40%	36%	46%	42%	37%	35%	43%
Not to immediate left	12%	9%	15%	18%	22%	13%	14%	13%	22%

Lessons Learned

- Scheduling
  - Considerations
    - Conduct immediately prior to SVT effort
    - ***Conduct in conjunction with C5RA/HMRA***
  - Op-sked changes mandated "Target of Opportunity" in some cases.
  - Utilizing DFILS schedule.
- Database
  - Equipment location in database major impact on audit effort
  - Number of records with QTY > 1
  - Number of records with validation dates
    - VSAC = "S"
  - X-RICs

Lessons Learned

Supporting Data

Hull Type	DDG	DDG	DDG	DDG	LSD	FFG	CG	CG	LSD
Total Records	32110	31125	31852	29529	32406	16877	27030	25845	23975
Qty>1	.4%	.5%	.4%	.2%	8.8%	8.3%	2%	2%	6.4%
XRICs	3.8%	4%	4.2%	4.5%	5.5%	7%	4.4%	4.5%	7.3%
Blank Location	0	.2%	0	.1%	0	.4%	0	0	0
Non-Specific location	2.6%	1.9%	4.4%	3.7%	1.5%	5.4%	3%	3.3%	2.2%
Validation Date	9.4%	6.2%	11.2%	11.1%	15.3%	14%	23.6%	29%	41%
VSAC "V" or "S"	18.9%	37.2%	11.7%	8.1%	27.1%	29%	23.8%	29.3%	58.9%

Root Cause Analysis Process

- Assign discrepancies to reason category

  - A – AIT-AIT Process not followed
  - C – Non-Program of Record Install (There is no program manager for this item, the ship went out and procured the item independently and installed it)
  - D – New Construction—Incorrect APLs or data loaded during population time of new ship database being built.
  - E – Non-Agree—CDM does not concur with audit team finding.
  - F – CDM Error
  - G – Incorrect Data Provided to CDM (ISEA, ILO, NSA....)
  - M – Life Cycle Maintenance (Shipboard, Intermediate or Depot level maintenance changed items and CKs were not provide to CDM. Also the supply system provides different FFF replacement items that contains different Identification data and different logistic data)
  - U – Unable to Track—Configuration Process Gap

- Provides a high level categorization of each discrepancy
  - Try to ascertain;
    - Activity responsible for reporting change
    - When the change occurred
    - Why the change didn't get properly recorded

- Methodology
  - Obtain CDM and ISEA input
    - Clarification from other activities, such as the audit team, may be deemed necessary
  - Review CDMD-OA, NDE, RMMCO, local ISEA databases, etc. to corroborate assignment of code
  - Review class wide application
- Create database
  - Notes and clarification included in database when applicable
  - Enable trending of results
- Ultimately intend to utilize trends to ID and remedy root causes with appropriate activities (e.g., CDM, ISEA, PM)

Root Cause Analysis

- Too soon to be conclusive
- Potential Issues
    - Quantified Records
    - Deletes associated with AIT
    - Parent/Child Relationships
- Identifying some Class-wide issues
- Trending deferrals
- Adjudicating non-agrees
    - Develop sub-categories
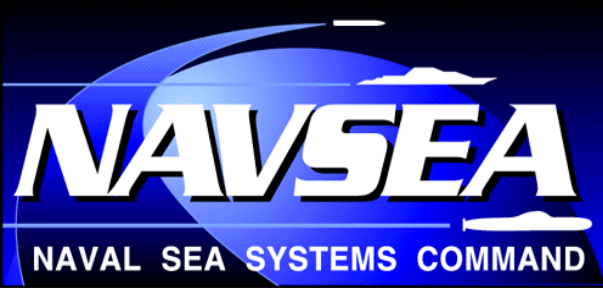   - ID in final report

Summary

- Ship's Force and CDM extremely cooperative.

- Process works and data is defendable.

- Stay the course! (Document Process/ Finalize Policy Document)

- Issues:

    - TOMCAT programming changes.

    - "Equipment to Record" candidate selection.

    - Candidate selection filters.

    - Short- fused schedule changes.

    - Validation Date Population for VSAC "S"

    - Utilization of audit data in subsequent SSVA effort

Back Up Slides

Commonly Deferred Items

Category	Qty. Audited	Deferred	Confirmed	Deleted
"X" RICs	111	111	0	0
Valves	607	341	252	14
Lighting/light fixtures	189	115	72	2
Boxes (terminal, distribution,jack, etc.)	133	68	63	2